

## PATENT ABSTRACTS OF JAPAN

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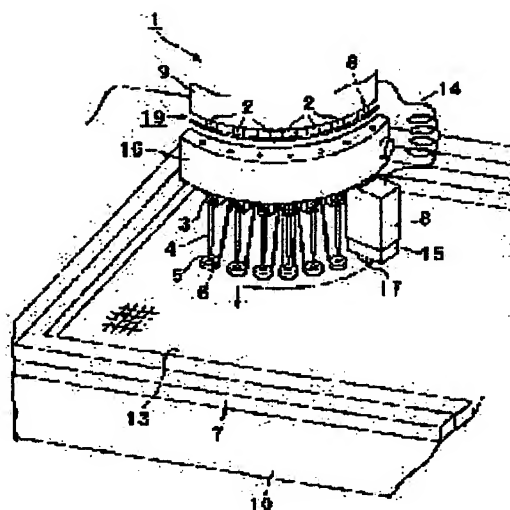
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### (54) EMBROIDERY SEWING MACHINE

#### (57)Abstract:

**PROBLEM TO BE SOLVED:** To provide an embroidery sewing machine, capable of carrying out not only embroidery processing but also printing processing without increasing the size of the embroidery sewing machine and further performing the changeover from the embroidery processing to the printing processing with a high accuracy and enabling the printing processing with a high accuracy and enabling the printing processing with a high accuracy.

**SOLUTION:** This embroidery sewing machine 1 comprises at least two needles 4 installed at an interval in an embroidery head 9 and a color changing mechanism 19 capable of selectively arranging the one needle 4 selected from the needles 4 at a sewing position by simultaneously moving the needles 4. The embroidery sewing machine 1 is further equipped with a printing head 8 for sticking a color material to a cloth 13 to be processed in place of at least one of the needles 4.



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CLAIMS

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[Claim(s)]

[Claim 1] The embroidery sewing machine characterized by to have replaced with at least one of said needles one needle chosen from said needle by moving said needle simultaneously in the embroidery sewing machine by which the \*\*\*\* device arranged selectively was prepared in the sewing location, and to prepare the print head which makes the charge of a coloring matter adhere to a processing cloth while at least two needles set spacing on the embroidery head and were formed in it.

[Claim 2] While at least two needles set spacing on an embroidery head and are formed in it In the embroidery sewing machine by which the \*\*\*\* device which arranges selectively one needle chosen from said needle by moving said needle simultaneously in a sewing location was established The embroidery sewing machine which is the side location of the needle in the maximum side edge of said needles, and is characterized by preparing the print head which makes the charge of a coloring matter adhere to a processing cloth in the extension top location of the migration locus of said needle.

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DETAILED DESCRIPTION

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[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to the embroidery sewing machine for performing not only embroidery processing but print processing to a processing cloth.

[0002]

[Description of the Prior Art] Conventionally, there are some which were indicated by JP,5-272086,A as an embroidery sewing machine which performs embroidery processing and print processing of ink to a processing cloth. By this embroidery sewing machine 80, as shown in drawing 12 and drawing 13, a frame 82 is horizontally formed above a table 81, three embroidery heads 83 are arranged in the front face of this frame 82, and the ink head 84 is arranged in the location which corresponds to the rear face of this frame 82 respectively with each embroidery head 83. Moreover, the bed 86 with which the top face became flat-tapped with a table 81 is built into a table 81, and the embroidery frame 85 with which one processing cloth 87 of an object was spread is formed in right above [ of this table 81 and a bed 86 ]. And at the time of embroidery processing, based on shank data, an embroidery frame 85 drives in the lower part of the embroidery head 83, and embroidery processing is performed by the embroidery head 83. Moreover, at the time of print processing, based on shank data, an embroidery frame 85 drives in the lower part of the ink head 84, and print processing is performed by the ink head 84.

[0003]

[Problem(s) to be Solved by the Invention] However, since the above-mentioned embroidery sewing machine 80 had prepared the ink head apart from the embroidery head, as compared with the embroidery sewing machine equipped only with the embroidery head, it needed to make large the movable range of the embroidery frame by the frame drive, and had the fault that an embroidery sewing machine will large-sized-ize.

[0004] Moreover, since it is necessary to spread the processing section of this processing cloth to an embroidery frame, and to hang down and lower the remainder in order to carry out embroidery processing to the processing cloth of a cartridge, while cutting and lacking said table, said bed is made into a cartridge and it must enable it to enter the interior of a processing cloth. For this reason, the movable range of an embroidery frame and a processing cloth is restricted to the range in which the processing cloth of a cartridge and the bed of the cartridge which entered into this do not interfere. Therefore, like the above-mentioned embroidery sewing machine 80, when an ink head was prepared behind an embroidery head, the cartridge bed needed to be prepared even in the lower part of an ink head for a long time from the lower part of an embroidery head, and implementation was difficult.

[0005] Then, the object of this invention is to perform not only embroidery processing but print processing, switch embroidery processing and print processing to high degree of accuracy further, and offer the embroidery sewing machine which enables high print processing of precision, without making an embroidery sewing machine large-sized-ize.

[0006]

[Means for Solving the Problem] In order to attain the above-mentioned object, the embroidery sewing

machine of claim 1 While at least two needles set spacing on an embroidery head and are formed in it By moving said needle simultaneously, one needle chosen from said needle was replaced with at least one of said needles in the embroidery sewing machine by which the \*\*\*\* device arranged selectively was prepared in the sewing location, and the print head which makes the charge of a coloring matter adhere to a processing cloth was prepared.

[0007] Moreover, while at least two needles set spacing on an embroidery head and are formed in it, the embroidery sewing machine of claim 2 In the embroidery sewing machine by which the \*\*\*\* device which arranges selectively one needle chosen from said needle by moving said needle simultaneously in a sewing location was established It is the side location of the needle in the maximum side edge of said needles, and the print head which makes the charge of a coloring matter adhere to a processing cloth was prepared in the extension top location of the migration locus of said needle.

[0008] There are the following operations in the embroidery sewing machine constituted as mentioned above. That is, said \*\*\*\* device is highly precise from the first, and it is strictly managed so that a needle may position. Therefore, also when a print head is replaced with the needle of a \*\*\*\* device and is prepared, and also when it is the side location of the needle in the maximum side edge of a \*\*\*\* device and prepares in the extension top location of the migration locus of said needle, the position control of a print head is made by high degree of accuracy only by it.

[0009] There are what has set and arranged spacing on radii as a mode of the array of at least two needles here, a thing which has set and arranged spacing on a straight line. A motor, a rotary solenoid, a fluid cylinder, etc. can be illustrated as a driving means of a \*\*\*\* device.

[0010] Moreover, when two or more embroidery heads are prepared, each \*\*\*\* devices of this embroidery head can be connected through a driving force means of communication. As this driving force means of communication, a rod etc. is employable.

[0011] A print head is highly precise, and in order to carry out print processing, while it approaches a processing cloth enough at the time of print processing, it is desirable to constitute so that it may not interfere in an embroidery frame at the time of embroidery processing, and may separate and may evacuate from a processing cloth. The following can be illustrated as this configuration mode.

(1) The mode driven up and down with the vertical drive by which the movable head which equipped the processing cloth with the ink injection device which injects ink was prepared in the lower part of a print head, and this movable head was built in the print head.

(2) The mode by which vertical actuation of the print head itself is carried out using the vertical drive of the needle formed in the embroidery head.

[0012] Especially the class of print head is not limited but can illustrate an ink jet method (what injects ink, hits against a processing cloth and draws an alphabetic character, a graphic form, a notation, etc. as a meeting of a dot according to the deformation force of a piezoelectric device, or the blowing pressure force of the heated ink), and a hot printing method. Although the class of charge of a coloring matter changes with classes of print head and it is not limited especially, in the case of an ink jet method, color ink, pigment ink, etc. can be illustrated, and, in the case of a hot printing method, the melting imprint sheet which comes to apply the color ink containing binding material, such as a wax, pigment ink, etc. to a film etc. can be illustrated.

[0013] The approach to which only the charge of a coloring matter of the color made into the object is made to adhere as the coloring approach of the processing cloth by the charge of a coloring matter, cyanogen and a Magenta, and the subtractive-color-mixture method for expressing colors various by making it adhere combining three colors of yellow can be illustrated. In the case of the latter, it is desirable by adding black to said three colors and using this black about a black part to make it vividness come out more.

[0014] In addition, in this invention, a "processing cloth" is a large concept which is not limited to the cloth made from fiber and also contains nature, synthetic leather, and a resin sheet.

[0015]

[Embodiment of the Invention]

<<first operation gestalt>> The example of a gestalt of the multi-needle embroidery sewing machine of

the two-animal type which carried out this invention is hereafter explained with reference to drawing 1 - drawing 8 . As shown in drawing 1 , two embroidery heads 9A and 9B formed successively on the table 12 and these embroidery heads 9A and 9B set the multi-needle embroidery sewing machine 1 caudad. In the embroidery frame 7 laid on the table 12, and the right-hand side of a table 12 The input to the controller 10 and this controller 10 for inputting \*\*\*\*\* of the graphic data which embroider or process [ print ] it, and the embroidery sewing machine 1 was analyzed, and it has the driver unit 11 which controls embroidery actuation of the embroidery sewing machine 1.

[0016] As shown in drawing 2 and drawing 3 , it has the \*\*\*\* device 19, and in this \*\*\*\* device 19, seven needle-bar advice holes 55 can set predetermined spacing to the shape of radii, and can be established in it at the front periphery section of the sewing needle equipment 44 with which the apron 16 was attached firmly to the front face, and each embroidery head 9 can insert seven needle bars 2 now by the most numerous. Now, a needle bar 2 is inserted in six needle-bar advice holes 55 except the rightmost needle-bar advice hole 55, a needle 4 is attached firmly to this needle bar 2 by the pointer stop 3, and the cloth presser foot 6 equipped with the insertion hole 5 is formed in each needle 4. Moreover, it replaces with a needle bar 2, the print head 8 of the ink jet method which injects color ink on the processing cloth 13 is attached firmly to the rightmost needle-bar advice hole 55, and a power source and a control signal are sent to this print head 8 by the cable 14 from the embroidery head 9.

[0017] According to the \*\*\*\* device 19, at the time of embroidery processing, radii migration is carried out so that the needle 4 by which vertical actuation should be carried out may come in the center of a transverse plane of the embroidery head 9 serially, the embroidery frame 7 driven in the direction of X-Y based on embroidery data is interlocked with, vertical actuation of the needle 4 is carried out, and embroidery processing is carried out. As a two-dot chain line shows to drawing 2 , at the time of print processing, radii migration is carried out in the center of a transverse plane of the embroidery head 9, and a print head 8 is interlocked with the embroidery frame 7 driven in the direction of X-Y based on print data, and carries out print processing.

[0018] If the detail of the \*\*\*\* device 19 is explained, as shown in drawing 1 and drawing 3 , the \*\*\*\* device 19 and its driving means are included in right-hand side embroidery head 9A, and only the \*\*\*\* device 19 is included in left-hand side embroidery head 9B. And each \*\*\*\* device 19 of both the embroidery heads 9A and 9B are connected with two rods 40 and 41 as a driving force means of communication, and they perform change-over actuation simultaneously.

[0019] By the embroidery sewing machine 1, while a predetermined needle 4 or a predetermined print head 8 is chosen and performing embroidery processing or print processing, hanging projection 46a of a locking lever 46 is in the fitting condition at crevice 45a of a rotating disc 45, and the rotating disc 45 supported to revolve by the driving shaft 42 free [ a revolution ] is in the lock condition that the revolution was prevented.

[0020] And in switching a needle 4 or a print head 8, the rotary solenoid 49 by which the screw stop was carried out to the embroidery head body 50 operates first, through the connection lever 51 and the link plate 52, the energization force of a spring 48 is resisted, a locking lever 46 is rotated, and it cancels the lock condition of a rotating disc 45. In this condition, a motor (graphic display abbreviation) is driven and a rotating disc 45 is rotated through a transfer member (graphic display abbreviation). Sewing needle equipment 44 also rotates simultaneously with rotation of this rotating disc 45.

[0021] After rotating a rotating disc 45 suitably and choosing a desired needle 4 or a desired print head 8, the energization to the rotary solenoid 49 is stopped. Thereby, a locking lever 46 is rotated to the above and hard flow, hanging projection 46a fits into crevice 45a, and a rotating disc 45 will be in a lock condition again.

[0022] In this way, it switches by choosing two or more needles 4 or the thing of the request of the print heads 8. Moreover, with the rod 41 connected with the locking lever 46 through the rod clamp 47, and the rod 40 connected with the \*\*\*\* lever 53 through the rod clamp 54, the same needle 4 or the same print head 8 is chosen simultaneously, and, as for left-hand side embroidery head 9B, change-over actuation is performed.

[0023] In the above-mentioned \*\*\*\* device 19, spacing of the needle-bar advice hole 55 is strictly

managed with the high degree of accuracy of 1/100mm order so that a needle 4 may be positioned with high degree of accuracy in a sewing location. Therefore, since it replaced with the needle bar 2 by which the needle 4 was attached firmly to one of these the needle-bar advice holes 55 and the print head 8 is attached firmly, positioning of a print head 8 is made by high degree of accuracy.

[0024] If a print head 8 is explained, as shown in drawing 2, the soffit section is equipped with a movable head 15, and with a vertical drive (graphic display abbreviation), at the time of embroidery processing, it will go up and will evacuate, and at the time of print processing, this movable head 15 will descend, as a two-dot chain line shows to drawing 2, and will approach the processing cloth 13. The movable head 15 is equipped with cyanogen, a Magenta, three cartridges (graphic display abbreviation) filled up with the ink (color ink or pigment ink) of three colors of yellow, respectively, and three ink injection devices 17 which inject the ink supplied from each cartridge in the shape of a dot matrix to the processing cloth 13.

[0025] As each ink injection devices 17C, 17M, and 17Y are shown in drawing 4, each nozzles 18C, 18M, and 18Y of the predetermined number (in this drawing, it expresses with four near a minimum for graphic display simplification) chosen from 2-1024 pieces (it is instantiation and not limited to this) are allotted to the parallel triplex row. Each nozzles 18C, 18M, and 18Y inject the ink of cyanogen, a Magenta, and yellow, respectively, and carry out print processing by various colors by the subtractive-color-mixture method by these 3 color at the processing cloth 13.

[0026] The creation approach of the embroidery data in this operation gestalt and print data advances in a procedure as shown in drawing 5.

[0027] (1) The input of graphic data (step S35)

The profile data of the graphic form which processes [ embroidery-] or processes [ print-] it are inputted into a controller 10.

[0028] (2) The attribute data input to each graphic data (step S36)

Assignment of a needle and a stitch is inputted as the attribute data to each graphic form which carries out embroidery processing. Moreover, to each graphic form which carries out print processing, as the attribute data, assignment of a color and a pattern is inputted and it inputs further whether it is a substrate pattern.

[0029] (3) Creation of embroidery data and print data (step S37)

The above-mentioned input to a controller 10 is passed to a driver unit 11, and this driver unit 11 creates one-stitch data from the profile data and stitch by the well-known approach to the graphic form with which assignment of embroidery processing was carried out. Moreover, to the graphic form with which assignment of print processing was carried out, it changes into the bit map format expressed by the meeting of the dot doubled with the print resolution of the ink injection device 17 from the profile data, a color, and a pattern. And the print data for every horizontal migration of an embroidery frame are created by dividing the data of this bit map format into the band-like data which have the dot width of face for several nozzle minutes in the direction of Y.

[0030] Based on the embroidery data and print data which were created in this way, substrate print processing is carried out first, and the embroidery sewing machine 1 continues, it carries out embroidery processing and performs the remaining print processing at the last.

[0031] Next, when the details of actuation of the ink injection device 17 in the case of carrying out print processing explain to a processing cloth 13, the case where print processing is carried out [ yellow / cyanogen, a Magenta, and ] in Isshiki which mixed at the fixed rate in the abbreviation rectangle range 27 which shows signs that the ink injection device 17 injects ink, serially to the processing cloth 13 spread on the embroidery frame moved rightward at \*\* - \*\*, and is shown with a two-dot chain line in \*\* is shown in drawing 6.

[0032] First, as shown in \*\*, an embroidery frame 7 is moved so that left-hand side ink injection device 17C may serve as a location at the right end of the abbreviation rectangle range 27. And if cyanogen ink is injected by left-hand side ink injection device 17C in this location, print processing of the cyanogen ink will be carried out at the shape of a straight line (the lower left is hatching of \*\*).

[0033] Next, as an embroidery frame is moved rightward, it goes, injecting ink by left-hand side ink

injection device 17C and it is shown in \*\*. If ink injection device 17M of a center become a location at the right end of the abbreviation rectangle range 27 Magenta ink is injected by ink injection device 17M of a center, and it puts on the cyanogen ink in which print processing was carried out by left-hand side ink injection device 17C, and it is mixed, or it distributes and print processing of the Magenta ink is carried out (the lower right is hatching of \*\*).

[0034] As Yellow ink is injected by right-hand side ink injection device 17Y (level hatching) and it is shown in \*\* like the above, the ink of three colors piles up, is mixed or distributed, and print processing of the desired color is carried out.

[0035] If an embroidery frame is furthermore moved rightward and left-hand side ink injection device 17C arrives at the left end of the abbreviation rectangle range 27, injection of the cyanogen ink by left-hand side ink injection device 17C will be stopped. And as shown in \*\*, injection of ink is stopped similarly and a series of print processing actuation completes other ink injection devices 17M and 17Y. In addition, an embroidery frame can be moved leftward, print processing can also be carried out, and this omits explanation in order to make bilateral symmetry the case where it is made to move rightward [above-mentioned].

[0036] Thus, whenever it makes the horizontal migration of the embroidery frame carry out in the direction of X, band-like print processing which has the dot width of face for several nozzle minutes in the direction of Y can be carried out according to the ink injection device 17. Therefore, shifting an embroidery frame for this every dot width of face in the direction of Y, this horizontal migration is repeated and print processing of the desired graphic form is carried out at the processing cloth 13. For example, in carrying out print processing of the smeared-away circle, the ink injection device 17 draws the locus shown in drawing 7 on the processing cloth 13.

[0037] Next, the embroidery sewing machine 1 of this operation gestalt explains taking the case of the case where the shank which shows a series of actuation in the case of embroidery-processing and print processing it actually to the processing cloth 13 at drawing 8 is given. The shank of drawing 8 consists of a star's embroidery shanks 21 and 22 prepared in a part of substrate print shank 20 of an abbreviation square, and this substrate print shank 20, and the circular print shank 24 is established in the center of the embroidery shank 21.

[0038] First, although it is print processing of the substrate print shank 20, as shown in drawing 2, a print head 8 is moved in the center of a transverse plane of the embroidery head 9, the movable head 15 of a print head 8 descends, and the ink injection device 17 is located on the processing cloth 13. And based on print data, an embroidery frame 7 drives in the direction of X-Y, and when ink is injected by the ink injection device 17 synchronizing with it, print processing of the substrate print shank 20 is carried out. Termination of print processing raises a movable head 15 to the original location.

[0039] Next, although it is embroidery processing of the embroidery shanks 21 and 22, as shown in drawing 2, the needle 4 specified by embroidery data is moved in the center of a transverse plane of the embroidery head 9. And based on the embroidery data of the embroidery shanks 21 and 22, an embroidery frame 7 drives in the direction of X-Y, and sequential processing of the embroidery shanks 21 and 22 is carried out by carrying out vertical actuation of the needle 4 synchronizing with it.

[0040] By carrying out print processing to the embroidery thread of the embroidery shank 21, the print shank 24 given in the center of the embroidery shank 21 stains embroidery thread, and performs it like print processing of the above-mentioned substrate print shank 20.

[0041] Thus, according to the embroidery sewing machine 1 of this constituted operation gestalt, by replacing with the needle bar 2 to which the needle 4 was attached firmly, and attaching a print head 8 firmly to the needle-bar advice hole 55, ink is injected at the time of print processing, and the sewing location and the ink injection location are made in agreement in the sewing location at the time of embroidery processing. For this reason, the actuation range of the embroidery frame 7 with the time of embroidery processing and print processing can be made in agreement. Therefore, embroidery processing and print processing can be performed in the same actuation range of an embroidery frame 7 as the embroidery sewing machine only for embroidery processings.

[0042] Moreover, since each ink injection device 17 of this embroidery sewing machine 1 is equipped



with two or more nozzles 18 and print processing of the dot width of face for several nozzle minutes can be performed at once, there is little migration of an embroidery frame 7 and print processing can be performed at a high speed.

[0043] Moreover, since it has a print processing function, this embroidery sewing machine 1 can be performed without re-covering of embroidery processing and print processing of the processing cloth 13. And since embroidery processing and print processing are switched to high degree of accuracy by using as it is, without extending the successive range of the existing \*\*\*\* device 19, the shank with which the embroidery shank and the print shank were combined can be created at accuracy as shank data, without a shank location mutual [ these ] being out of order.

[0044] Furthermore, since an embroidery shank can also be stained by print processing, the embroidery of the pattern which used the multiple color more than the number of stitch with which an embroidery sewing machine is equipped is easily realizable. Therefore, even if an embroidery head is a two-stitch type, the multicolor embroidery same in false as the embroidery sewing machine of a multi-needle type can be performed by embroidering with white yarn with one needle, and performing print processing by the print head replaced with and attached firmly to the needle of another side from on this embroidery.

[0045] << -- second operation gestalt>> -- next, drawing 9 shows the embroidery sewing machine 28 of the second operation gestalt which materialized this invention, and is different from the first operation gestalt only in the following point. Therefore, about the same part as the first operation gestalt, as shown in drawing 9, the same number is laid down and duplication explanation is avoided.

[0046] Five needle bars (graphic display abbreviation) by which vertical actuation is carried out with a needle drive (graphic display abbreviation) set predetermined spacing to the shape of a straight line, and are prepared in the embroidery head 29 of the embroidery sewing machine 28. A needle 4 is attached firmly to this needle bar by the pointer stop 3, and the cloth presser foot 6 equipped with the insertion hole 5 is formed in each needle 4. Moreover, it is the right-hand side location of the rightmost needle 4, and the print head 30 is formed in the extension top location of the migration locus of this needle 4. And at the time of embroidery processing, straight-line migration is carried out so that the needle 4 by which vertical actuation should be carried out may come in the center of a transverse plane of the embroidery head 29 serially, and as a two-dot chain line shows to drawing 9, at the time of print processing, straight-line migration of the print head 8 is carried out in the center of a transverse plane of the embroidery head 29.

[0047] According to this embroidery sewing machine 28, except for the following point, the same effectiveness as the first operation gestalt can be acquired.

- (1) A little successive range of the existing \*\*\*\* device is extended so that the print head 30 prepared in the above-mentioned location can move in the center of a transverse plane of the embroidery head 29.
- (2) Since it did not replace with the existing needle but the print head was prepared additionally, also when performing embroidery processing and print processing simultaneously, an usable number of stitch does not become fewer.

[0048] In addition, in the range which is not limited to the configuration of said operation gestalt, for example, does not deviate from the meaning of invention as follows, this invention can be changed suitably and can also be materialized.

- (1) Let me fluctuate the number of nozzles 18.
- (2) Arrange each ink injection device 17 in the shape of a straight line on the base of a movable head 32 to be shown in drawing 10.

[0049] (3) To be shown in drawing 11 (a), approach and arrange three nozzles 18 in the base of a movable head 33, and use each nozzle 18 for cyanogen, a Magenta, and the ink of yellow, and ink should inject towards one point from each nozzle 18 so that a broken line shows to drawing 11 (b). If it carries out like this, since processing for 1 dot of print data can carry out simultaneously, migration of an embroidery frame can be lessened as compared with the case where the location of the ink injection place from each nozzle 18 is made separate.

[0050] Furthermore, since one print processing is made at a time, using the one-stitch data for embroidery processing, an embroidery frame is driven and print processing can also be carried out.

Since an embroidery frame is moved so that direct drawing \*\*\*\*\* may be traced (for example, if it is a curve curve) especially when carrying out print processing of drawing \*\*\*\*\* , as compared with the case where it moves so that all lines may be traced in order using the print data created by the approach shown in drawing 5 , there is little migration of an embroidery frame and it can carry out print processing to a high speed.

[0051] (4) Consider as the ink injection device which arranged the nozzle in the direction of X in the shape of a straight line, and inject ink from a nozzle, moving an embroidery frame in the direction of Y.

(5) Make a nozzle pivotable a core [ the shaft of the processing surface of cloth and a perpendicular direction ], rotate the include angle of a nozzle so that migration of an embroidery frame may become the smallest according to the configuration of a shank, and drive an embroidery frame. For example, in carrying out print processing of the straight line which was rotated 45 degrees and drawn, a nozzle is rotated 45 degrees and it carries out by driving an embroidery frame in a direction 45 degrees.

[0052] (6) Prepare a gap between a sewing location and the ink injection location of a print head.

(7) A movable head is not prepared in a print head, but vertical actuation of the print head itself should be carried out using a needle drive.

(8) In the first operation gestalt, like the second operation gestalt, a needle-bar advice hole is set at the front of an embroidery head, set fixed spacing in the shape of a straight line, prepare, straight-line migration should be carried out for the needle by which vertical actuation should be carried out to come serially in the center of a transverse plane of an embroidery head at the time of embroidery processing, and straight-line migration of the print head should be carried out in the center of a transverse plane of an embroidery head at the time of print processing.

(9) In the second operation gestalt, like the first operation gestalt, a needle and a print head are set at the front of an embroidery head, set fixed spacing in the shape of radii, prepare, radii migration should be carried out for the needle by which vertical actuation should be carried out to come serially in the center of a transverse plane of an embroidery head at the time of embroidery processing, and radii migration of the print head should be carried out in the center of a transverse plane of an embroidery head at the time of print processing.

[0053]

[Effect of the Invention] Since the embroidery sewing machine of this invention is constituted as above-mentioned, it does the following outstanding effectiveness so by any [ of claim 1 and claim 2 ] invention.

[0054] (1) Not only embroidery processing but print processing can be given, without making in agreement the sewing location at the time of embroidery processing to a processing cloth, and the ink injection location at the time of print processing, making in agreement the actuation range of an embroidery frame with the time of embroidery processing and print processing, making and having it, and making an embroidery sewing machine large-sized-ize.

[0055] (2) without establishing the change-over device of dedication newly, by using the existing \*\*\*\* device as it is (or a successive range -- a few -- extending), it can switch and have embroidery processing and print processing in high degree of accuracy, and high print processing of precision can be carried out.

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DESCRIPTION OF DRAWINGS

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[Brief Description of the Drawings]

[Drawing 1] It is the whole perspective view showing the outline configuration of the embroidery sewing machine of the first operation gestalt which materialized this invention.

[Drawing 2] It is the perspective view showing the important section of this embroidery sewing machine.

[Drawing 3] It is the important section cross-sectional view showing the \*\*\*\* device of this embroidery sewing machine.

[Drawing 4] It is the bottom view of the print head of this embroidery sewing machine.

[Drawing 5] It is the flow chart which shows the creation approach of the embroidery data of this embroidery sewing machine, and print data.

[Drawing 6] It is the top view showing an example of actuation of the ink injection device at the time of print processing of this embroidery sewing machine.

[Drawing 7] It is the top view showing example of another of actuation of this ink injection device.

[Drawing 8] It is the top view showing the shank given by this embroidery sewing machine.

[Drawing 9] It is the perspective view showing the important section of the embroidery sewing machine of the \*\* NI operation gestalt which materialized this invention.

[Drawing 10] It is the bottom view of the example of modification of the print head of the embroidery sewing machine of the first which materialized this invention, or the second operation gestalt.

[Drawing 11] It is the explanatory view in which (a) shows the bottom view of another example of modification of the print head of this embroidery sewing machine, and (b) shows the situation of injection of the color from this print head.

[Drawing 12] It is the top view of the embroidery sewing machine of the conventional example.

[Drawing 13] It is the XIII-XIII line sectional view of drawing 12 .

[Description of Notations]

1 Embroidery Sewing Machine

4 Needle

8 Print Head

9 Embroidery Head

13 Processing Cloth

19 \*\*\*\* Device

28 Embroidery Sewing Machine

29 Embroidery Head

30 Print Head

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[Translation done.]

\* NOTICES \*

JPO and NCIPi are not responsible for any damages caused by the use of this translation.

1. This document has been translated by computer. So the translation may not reflect the original precisely.

2. \*\*\*\* shows the word which can not be translated.

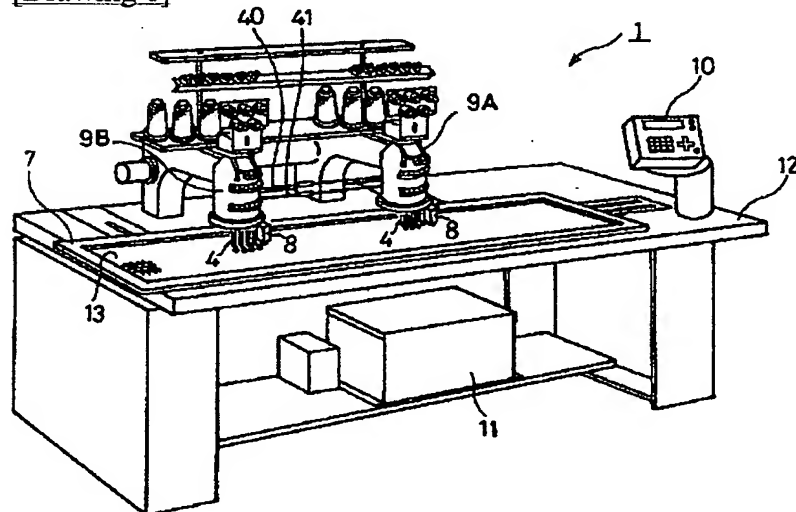
3. In the drawings, any words are not translated.

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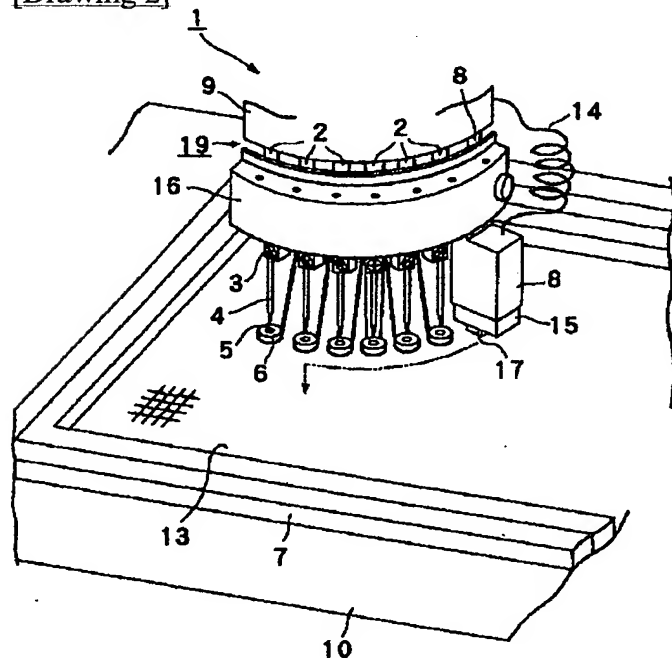
DRAWINGS

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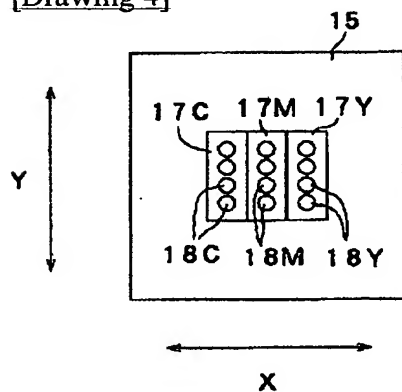
[Drawing 1]



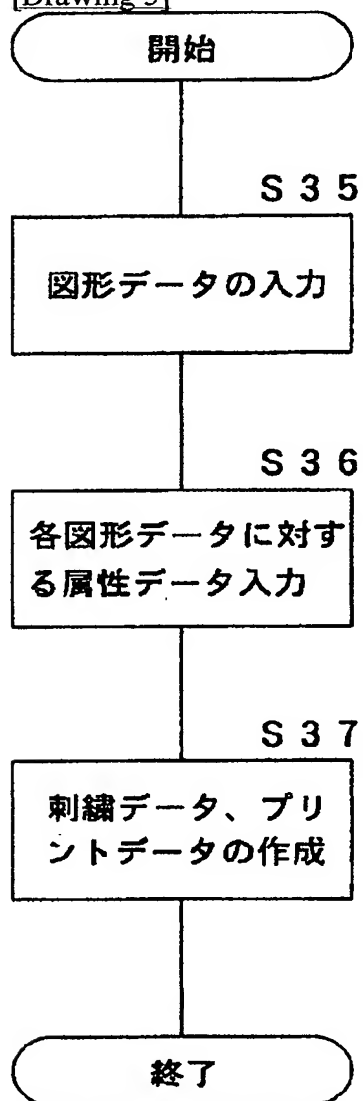
[Drawing 2]



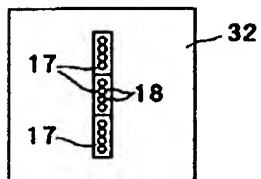
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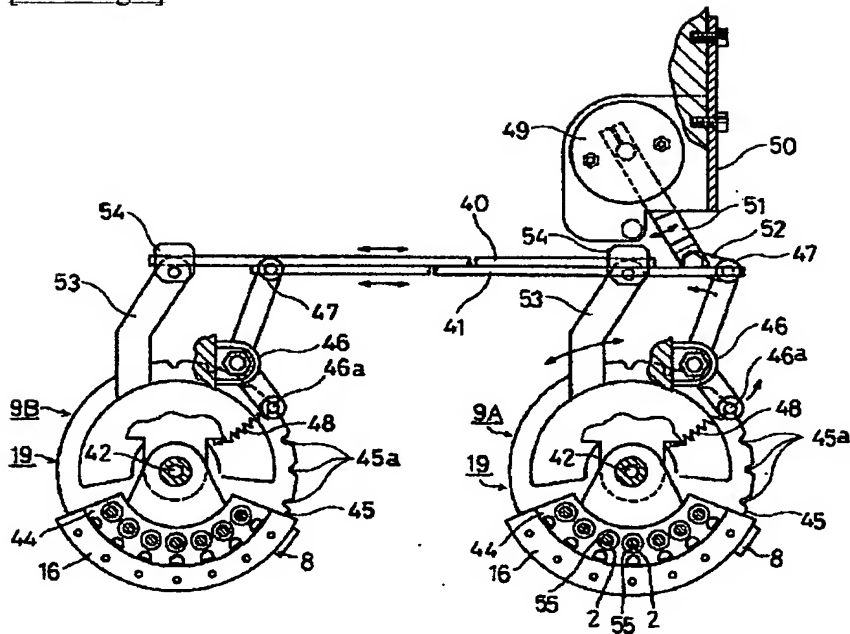
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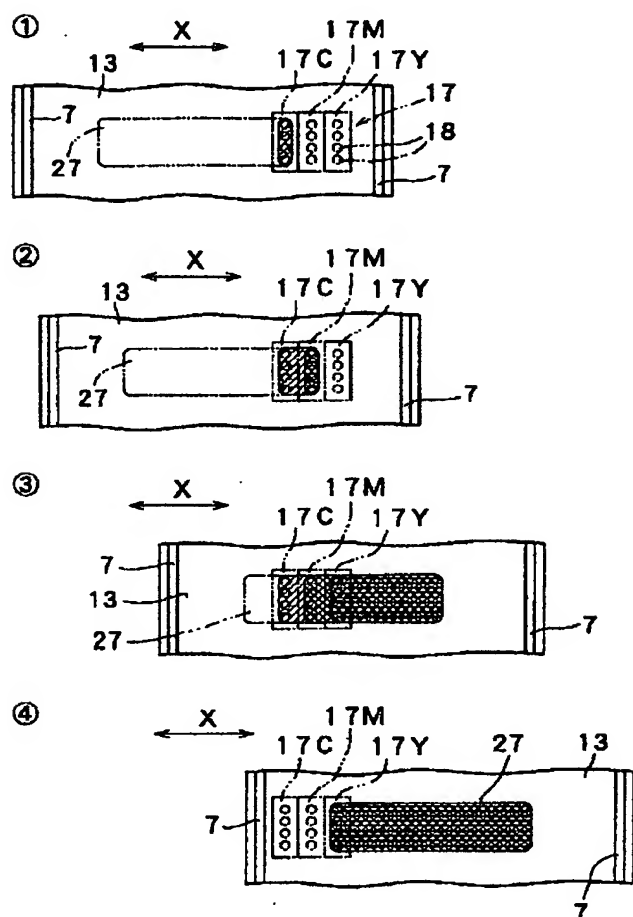
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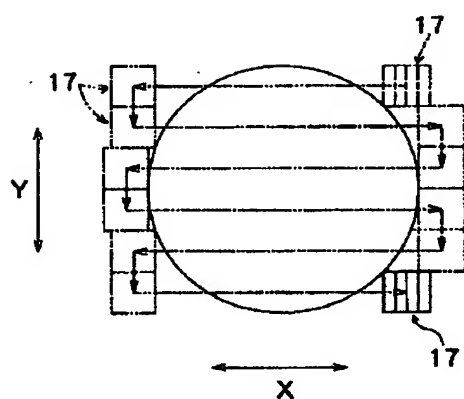
[Drawing 3]



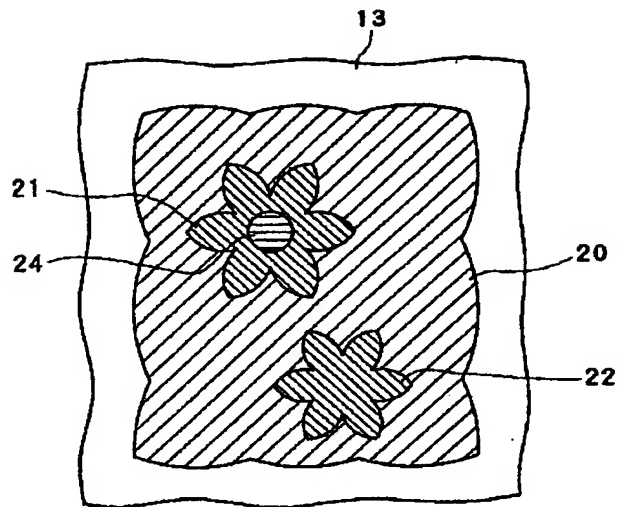
[Drawing 6]



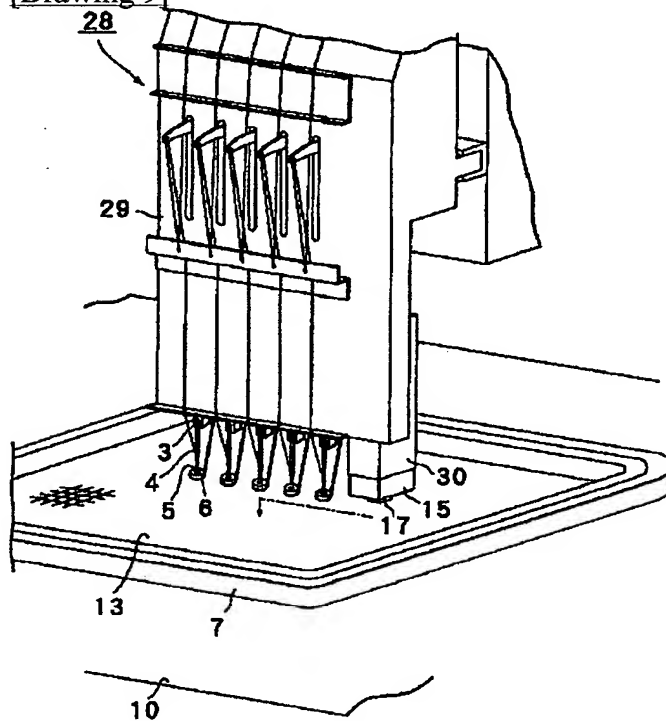
[Drawing 7]



[Drawing 8]



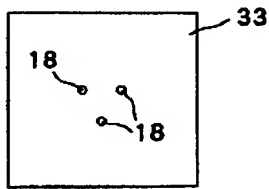
[Drawing 9]



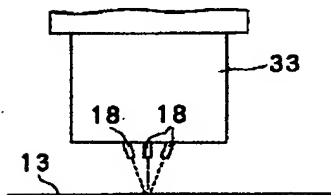
[Drawing 11]



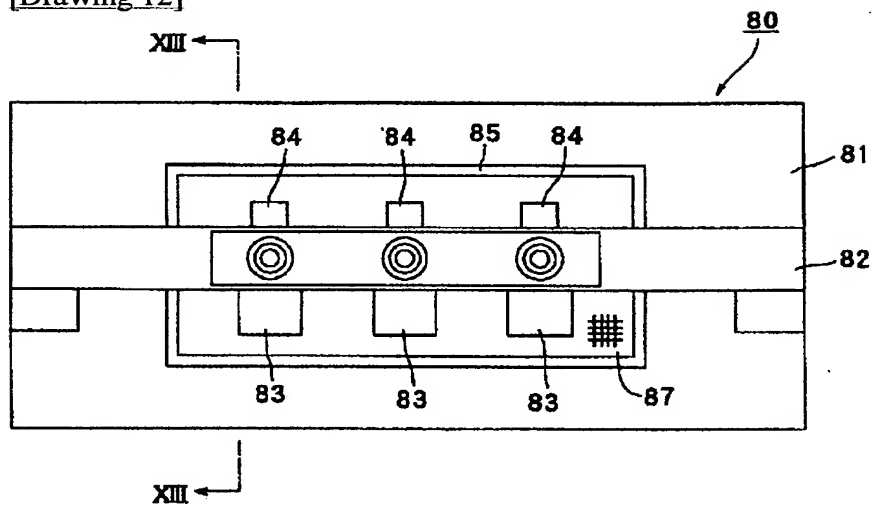
(a)



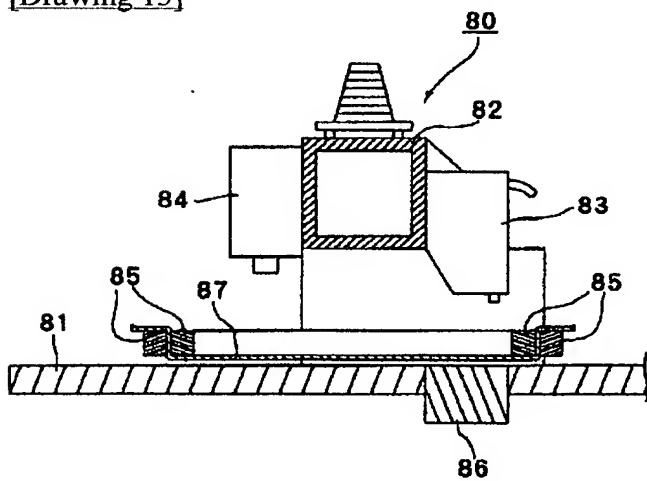
(b)



[Drawing 12]



[Drawing 13]



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[Translation done.]